

Assessing Readiness, Achievement & Impact of Stage 3 Care Coordination Criteria

Final Report

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Contents

Abstract	3
Purpose	4
Scope	4
Methods	5
Results	6
Aim 1	6
Aim 2	6
Aim 3	8
Key recommendations	9
Policymakers	9
EHR Vendors	12
Primary Care Practices	17
Conclusion	19
List of Publications and Products	20

Abstract

Purpose: Assess the readiness, feasibility, and perceived impact of achieving proposed Stage 3 meaningful use care coordination criteria among primary care practices. Provide recommendations to policymakers, EHR vendors, and primary care practices to improve the value of the criteria.

Scope: The Medicare and Medicaid EHR Incentive Programs encourage adoption of electronic health records by defining, and providing incentives for achieving, progressively more advanced meaningful use criteria. Proposed Stage 3 criteria –expected to be finalized in early 2015 – seek to improve care coordination by promoting summary care record exchange, reconciliation, and referral results reporting. Care coordination criteria, however, pose unique challenges because most providers have little experience exchanging or using electronically shared clinical data.

Methods: A mixed-methods study comprised of a statewide survey of Michigan primary care practices, and an implementation assessment in which 12 primary care practices attempted to achieve the proposed Stage 3 care coordination criteria. We assessed their experience in three rounds of semi-structured interviews, which were coded and analyzed to identify key themes.

Results: In both study components, providers anticipated improved care coordination as a result of meeting proposed Stage 3 criteria. However, most practices lacked EHR functionalities and workflows to ensure that achieving the criteria would enhance care coordination. Our suggested revisions to the criteria are likely to improve their value, and would be bolstered by EHR innovations that we describe to support care coordination. Finally, we recommend specific practice-based strategies would further enhance care coordination and the value of meeting the Stage 3 criteria.

Key Words: meaningful use, care coordination, EHR, health information exchange

Purpose

The Medicare and Medicaid EHR Incentive Programs, established with funding from the 2009 Health Information Technology for Economic and Clinical Health (HITECH) Act, offers financial incentives for eligible providers and eligible hospitals to adopt and demonstrate meaningful use of electronic health records (EHRs). Meaningful use is defined in stages that require increasingly advanced and sophisticated use of EHRs. The third stage of meaningful use is slated to begin in 2017, and is intended to be the stage in which EHR use produces demonstrated improvement in key performance outcomes. Proposed Stage 3 meaningful use criteria were announced in early 2013, and place an increased emphasis on care coordination -- specifically the ability to electronically send, receive, and incorporation information between providers EHRs during transitions of care.

Researchers at the University of Michigan, in partnership with the Altarum Institute, were funded by the Agency for Healthcare Research and Quality to assess the readiness, feasibility, and perceived impact of achieving proposed Stage 3 meaningful use care coordination criteria among primary care practices. Specifically, the study sought to achieve the following three aims:

Aim 1. Assess current readiness of eligible primary care practices to achieve proposed Stage 3 care coordination criteria in order to inform policy-driven improvement strategies.

Aim 2. Identify barriers and associated facilitators to meeting proposed Stage 3 care coordination criteria in order to help primary care practices overcome gaps to criteria achievement.

Aim 3. Assess the potential impact of proposed Stage 3 care coordination criteria, and identify strategies to increase the value of the criteria to primary care practices.

The findings sought to offer specific guidance to policymakers on how to refine currently proposed criteria in ways that are likely to improve care coordination. For EHR vendors, the findings point to technology barriers that impede care coordination as well as EHR innovations that would address them. For primary care providers, the findings inform the design of effective strategies to meet the criteria in ways that facilitate more coordinated care.

Scope

Care coordination criteria were largely deferred to later stages of meaningful use because of the unique challenges they pose: (1) providers need to learn how to use EHRs to generate key pieces of information that should follow patients between settings; (2) providers need the capability to share data electronically across EHRs ("health information exchange" or HIE); and (3) providers need to become accustomed to receiving and incorporating data from other settings. Most providers have little experience exchanging or using electronically shared clinical data.

A final version of Stage 3 criteria recommendations were released by the Office of the National Coordinator (ONC)'s Meaningful Use Workgroup in March 2014. ONC and the Department of Health and Human Services (DHHS) are expected to issue an official proposed rule in Fall 2014, and a final rule

is anticipated by early 2015.¹ Our study focused on the proposed Stage 3 care coordination criteria from the perspective of primary care practices -- SGRP 302/303 and the ability to support SGRP 305. At the time we designed our study, the recommended measures specified that primary care providers send a summary care record for 65% of referrals, with 30% sent electronically. Providers also needed to demonstrate reconciliation of medications (for >50% of transitions of care) as well as medication allergies and problems (for >10% of transitions).

Methods

Our study included a statewide survey of primary care practices, complemented by three rounds of interviews in 12 primary care practices that attempted to achieve the proposed Stage 3 care coordination criteria. The *statewide survey* captured practice demographics, readiness for Stage 2 and Stage 3 meaningful use care coordination criteria, health information exchange (HIE) participation, facilitators and barriers to meeting Stage 3 criteria, perceived impact of Stage 3 criteria and optimal approach to information sharing to support care coordination. A subset of questions was targeted specifically to PCPs. The survey was administered in late 2013 to a random sample of 328 primary care practices in Michigan that had achieved Stage 1 meaningful use with support from the Michigan Center for Effective IT Adoption (M-CEITA), the Michigan Regional Extension Center. We received responses from 233 practice managers (71% response rate) and 174 primary care providers (53% response rate). All reported figures were estimated using survey sampling weights based on our sampling strategy in order to generalize results to the statewide population of primary care practices that had achieved Stage 1 meaningful use.

In the *implementation arm* of our study, 12 practices attempted to achieve the proposed Stage 3 care coordination criteria with support from an implementation specialist from M-CEITA. Practices ranged in size from 1 to 19 full-time physicians and used EHRs from nine different vendors. All practices had achieved Stage 1 meaningful use with the support of M-CEITA as of September 1, 2013, as well as participated in Michigan Health Connect (MHC), a regional health information organization in western Michigan. M-CEITA implementation specialists conducted an on-site initial assessment, identified barriers, developed a plan to achieve target criteria, and supported plan execution. We assessed the implementation experience by conducting three rounds of semi-structured interviews with key practice staff (the practice manager and at least one PCP) between October 2013 and June 2014: interviews were in person at the outset of implementation, by phone three months later, and again in person six months following initiation of implementation. The initial round of interviews focused on current state processes of supporting care coordination using EHRs. The second round of interviews focused on barriers to achieving Stage 3 care coordination measures and potential strategies to overcome them. The final round of interviews focused on progress towards achieving the criteria, suggested changes to the criteria, strategies for increasing the impact of the criteria, and EHR innovations to support criteria achievement. Interview transcripts were coded and analyzed to extract key findings.

¹ Dimick, C. Preliminary Stage 3 Meaningful Use Recommendations Released. *Journal of AHIMA*. March 11, 2014. <http://journal.ahima.org/2014/03/11/preliminary-stage-3-meaningful-use-recommendations-released/>

Results

Aim 1. Assess current readiness of eligible primary care practices to achieve proposed Stage 3 care coordination criteria

Based on statewide survey data, the majority of practices primarily rely on mail or fax to send and receive patient information across care settings. Electronic forms of information sharing were used to a lesser extent (Table 1).

Table 1. Forms of Sharing Patient Information (% of practices)

	Mail	Fax/eFax	Shared EHR/HIT Platform	Local or regional HIE
Substantially	15%	56%	20%	8%
Moderately	29%	31%	20%	12%
Minimally	48%	8%	21%	21%
Never	3%	1%	34%	49%
Not Reported	6%	4%	6%	10%

Overall 11.7% of our sample reported that they can currently meet all new proposed Stage 3 care coordination criteria. When we examined each component of the criteria separately (Table 2), there was a range in the proportion of practices that reported being able to currently meet it: only 38% of practices could receive at least 10% of referral results electronically while 86% of practices could reconcile medication allergies during a relevant encounter for more than 10% of transitions of care (TOCs). Overall Stage 3 care coordination readiness did not vary significantly by practice size, whether or not the practice was part of an integrated delivery network, or whether or not they participated in an HIE.

Table 2. Readiness for Stage 3 Care Coordination Criteria – Dimensions of Care Coordination (% of PCPs)

	Provide a summary of care record for at least 65% of TOCs and referrals	Provide a summary of care record electronically for at least 30% of TOCs and referrals	Include in the Summary of Care Record a concise narrative in support of referrals	Receive referral results for at least 50% of referrals	Receive at least 10% of referral results electronically	Reconcile medication allergies during a relevant encounter for more than 10% of TOCs	Reconcile problems during a relevant encounter for more than 10% of TOCs
Yes	66%	45%	43%	60%	38%	86%	78%
No	29%	51%	44%	34%	58%	9%	17%
Unsure	4%	4%	14%	6%	5%	5%	5%

Aim 2. Identify barriers and associated facilitators to meeting proposed Stage 3 care coordination criteria

In the statewide sample, 73% of practices felt that better options to send and receive information electronically across settings would help them meet the criteria, and 72% of practices felt that additional financial incentives would be helpful (Figure 1). Lack of provider and practice staff time was most often cited as a barrier to meeting the criteria (by 69% of practices) followed by the complexity of required workflow changes (68% of practices) (Figure 2).

Figure 1. Facilitators of Achieving Stage 3 Care Coordination Criteria (% of practices)

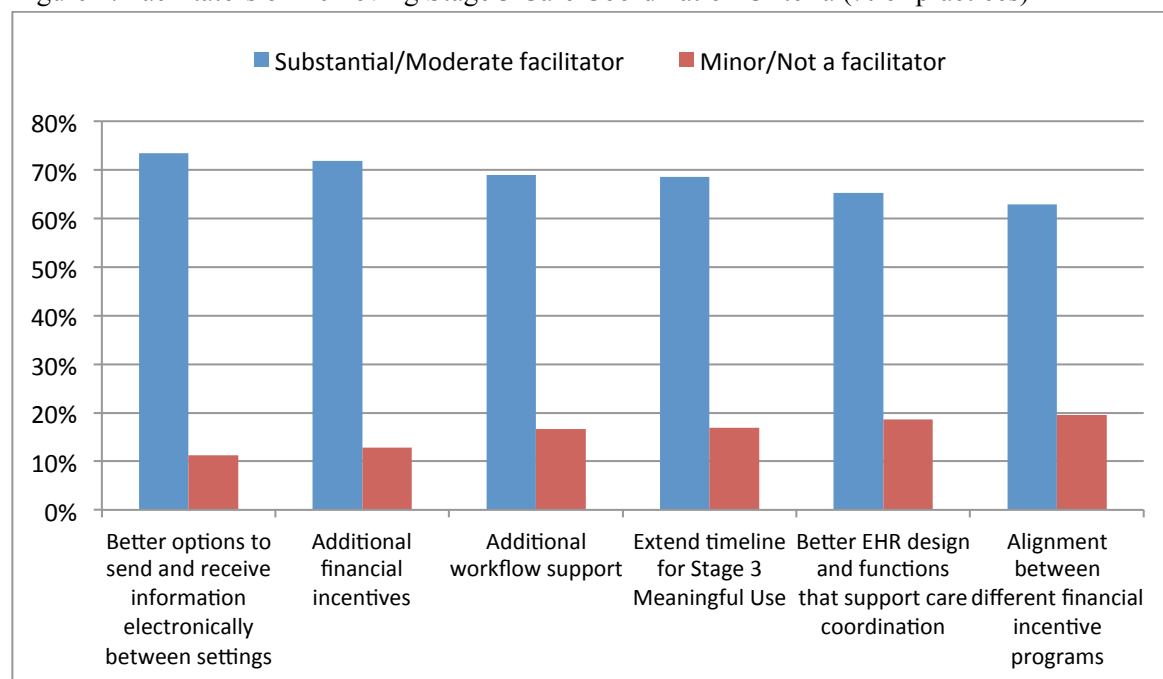
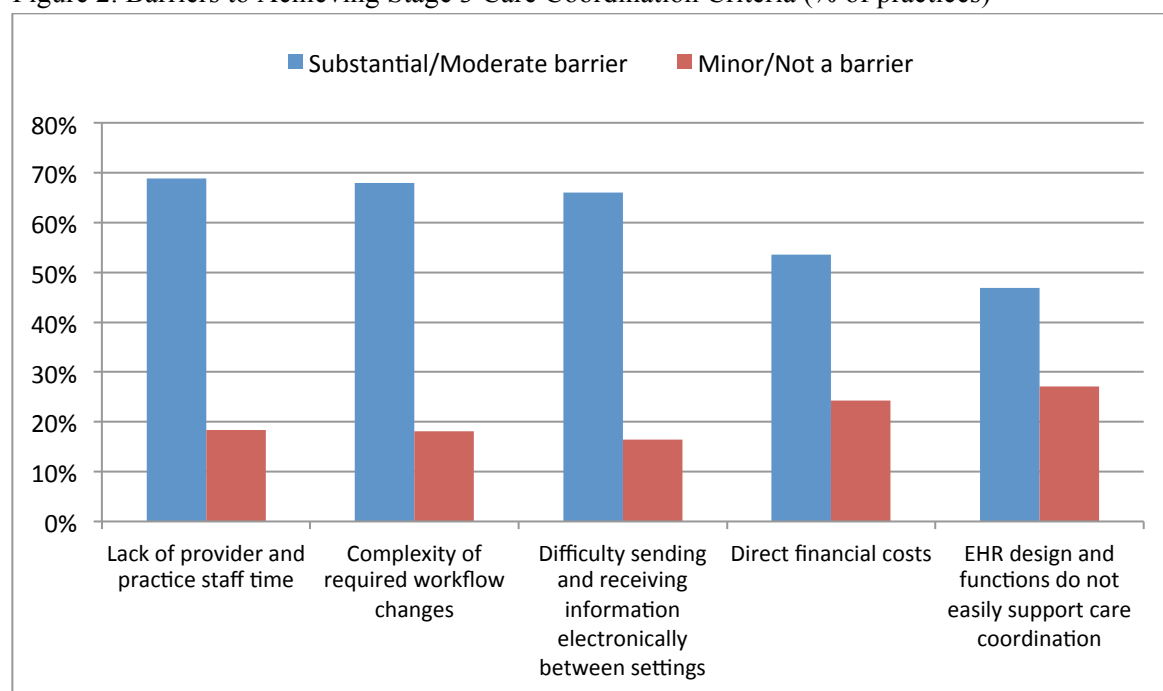


Figure 2. Barriers to Achieving Stage 3 Care Coordination Criteria (% of practices)



Aim 3. Assess the potential impact of proposed Stage 3 care coordination criteria, and identify strategies to increase the value of the criteria to primary care practices.

When we asked primary care providers about the anticipated impact on care coordination of meeting the Stage 3 criteria, there was widespread agreement that all components of the criteria would substantially or moderately improve care coordination. Sending and receiving summary of care records (SCRs) was most consistently designated as likely to substantially or moderately improve care coordination (93% and 92% of respondents, respectively). Seventy-five percent of PCPs felt that receiving an acknowledgement from the specialist that the referral was received would substantially or moderately improve care coordination.

Table 3. Perceived Impact of Stage 3 Care Coordination Criteria – Dimensions of Criteria (% of PCPs)

	Sending an SCR with key clinical information when a patient is referred to a specialist	Sending a current care synopsis and expectations when a patient is referred to a specialist	Receiving an acknowledgement from the specialist that the referral was received	Receiving an SCR with key clinical information when a patient returns from a specialist or is discharged from the hospital	Reconciling key clinical information when a patient returns from a specialist or is discharged from the hospital
Substantially/moderately improve care	93%	89%	75%	92%	87%
No Impact	4%	8%	21%	4%	9%
Substantially/moderately worsen care	2%	1%	2%	2%	2%

Over three-quarters of primary care providers in our statewide sample strongly or somewhat agreed that meeting the proposed criteria would improve information completeness, clarity, timeliness, and responsiveness to support care coordination. There was less agreement about whether meeting the criteria would help with key clinical activities, such as assisting with diagnosis, treatment, and management of the patient's health problem. Nonetheless, the majority of primary care providers felt that meeting the criteria would reduce duplicative utilization of diagnostic tests (78%), adverse drug events (70%), and hospital admissions and readmissions (57%)

Table 4. Perceived Impact of Stage 3 Care Coordination Criteria – Dimensions of Care Coordination (% of PCPs)

	Know about visits that my patients make to other physicians	Send the specialist notification of the patient's history and reason for the consultation when referring a patient	Talk with my patient or their family member(s) about the results of their visit(s) with a specialist
Strongly/somewhat agree	82%	82%	76%
Neither agree nor disagree	10%	10%	13%
Strongly/somewhat disagree	7%	7%	10%
	The clarity of specialist correspondence	The timeliness of specialist correspondence	The responsiveness to referral questions in specialist correspondence
Strongly/somewhat agree	78%	76%	75%
Neither agree nor disagree	11%	15%	13%
Strongly/somewhat disagree	10%	8%	11%
	Assist with diagnosis of the patient's health problem	Assist with treatment and management of the patient's health problem	Help the patient overall
Strongly/somewhat agree	43%	47%	46%
Neither agree nor disagree	37%	37%	38%
Strongly/somewhat disagree	17%	12%	12%
	A reduction in duplication of ordered labs and other diagnostic tests	A reduction in adverse drug events	A reduction in hospital admissions and readmissions*
Strongly/somewhat agree	78%	70%	57%
Neither agree nor disagree	9%	17%	23%
Strongly/somewhat disagree	12%	11%	19%

* Note: We asked separately about admissions and readmissions but the proportion of responses by category were identical.

Key recommendations

Key findings and recommendations were tailored to three different audiences to maximize potential impact of the research conducted.

Policymakers

Based on information from the statewide survey and interviews, a number of recommended changes are suggested to enhance proposed Stage 3 care coordination criteria.

I. Sending Information during Care Transitions: Summary of Care Records (SCRs)

Recommendation Changes:

Create more flexibility on information included in SCR. Consider limiting the breadth of fields required in SCRs, particularly clinical data fields, to allow providers to send only the subset of information relevant to the specific care transition.

Clarify the definition of the concise narrative included in SCRs. Consider providing parameters to guide the free-text narrative that is included in SCRs, with a particular emphasis on what constitutes

“concise” and how the narrative relates to the progress note and other components of the SCR.

Context for Recommendations

The vast majority of primary care providers in the statewide sample felt that sending the SCR and concise narrative would substantially improve care coordination. In our statewide sample, sixty-six percent of practices were able to send an SCR during transitions of care and 45% were able to do so electronically. Forty-three percent of practices were able to include a concise narrative in the SCR. In our implementation sample, practices identified two primary challenges to meeting the proposed Stage 3 SCR criterion in a meaningful way. First, practices perceived that their EHR produced an SCR containing extraneous information. A common workaround was to print the SCR, remove pages, and then scan the shortened document to send. Practices therefore expressed a desire to customize the information included in an SCR according to the specific needs of each care transition. Second, implementation sample practices reported that progress notes typically contain a concise narrative, but it is not clearly differentiated from the rest of the progress note and it is not clear whether this would fulfill the Stage 3 criterion. Practices were confident that they could meet this dimension of the criterion if the relevant portion of their progress note could be parsed, but felt that generating additional (and often duplicative) text would negatively impact workflow.

II. Receiving Information during Care Transitions: Referral Report Receipt

Recommendation Changes:

Specify that eligible professionals and eligible hospitals should send SCRs to primary care providers within 1-3 days of the referral or discharge. Including in the SCR criterion a timeframe in which the SCR must be sent would substantially decrease the burden currently placed on practices to search for missing information. The recommended timeframe is based on statewide survey data in which the largest group of respondents reported an optimal window of 1 day (24 hours) for receiving information, closely followed by 3 days (or 72 hours).

Expand the referral acknowledgement criterion to include more granular referral tracking status. The ability of primary care practices to track scheduled/rescheduled referral appointments and whether or not they occurred would go even further in supporting care coordination and in alleviating the burden of searching for referral status.

Context for Recommendations

The vast majority of primary care providers in the statewide survey felt that receiving an SCR, from specialists following a referral and from hospitals following a discharge, would improve care coordination. A majority of PCPs also saw value in receiving acknowledgement from specialists that the referral request was received. Implementation sample practices reported spending a significant amount of time tracking down referral status and information from specialists and hospitals. They therefore valued receiving information electronically because it arrived more quickly and was easier to integrate into their EHRs. They also felt that adding a timeframe in which the SCR is sent would increase the value of the

Stage 3 criterion. As reported in the box above, data from the statewide survey suggests that 1-3 days is the optimal timeframe.

In our statewide sample, 60% of practices reported readiness to receive referral reports for at least half of their referrals, and 38% reported being able to do so electronically for 10% of referrals. Implementation sample practices identified a difference between their readiness and actual receipt, however, as many specialists failed to send referral reports in a timely fashion. When reports were received, implementation sample practices reported numerous shortcomings of reports generated from specialists' EHRs, including lack of clarity, excessive length, and poor organization.

III. Reconciling Information during Care Transitions: Medications, Medication Allergies, and Problems

Recommendation Changes:

Proposed thresholds for reconciliation should be increased. Consider raising thresholds for both the percent of care transitions for which information (medication, medication allergy and problems) is reconciled and for the percent of care transitions for which reconciliation is performed electronically.

Clarify the level of detail required for problem list reconciliation. Consider specifying that problem list reconciliation may be performed at a less granular level than is contained in the SCR or other care transition document (e.g., XXX or XXX.X levels vs XXX.XX level).

Clarify whether acute problems and short-term medications need to be reconciled. Clarify what types of problems and medications should be reconciled to resolve heterogeneity in current practices that impede care coordination.

Context for Recommendations

A majority of primary care providers in the statewide survey felt that performing reconciliation of medications, medication allergies, and problems after a care transition would improve care coordination. Implementation sample practices felt that raising the thresholds could increase the value of the criterion; while they felt that a threshold of 100% would be too high, a substantial increase would ensure that reconciliation becomes a standard workflow, which would meaningfully improve care coordination. Most statewide survey practices reported that they were ready to meet the proposed Stage 3 requirements to reconcile medications for more than 50% of care transitions required in Stage 2 as well as the new Stage 3 requirements for reconciling medication allergies (86%) and problems (78%) for more than 10% of transitions.

There were, however, several potential challenges to meeting the criterion in a meaningful way. First, although statewide survey data revealed agreement that problem lists, medications and medication allergies should be reconciled following a care transition, among other types of information, some implementation sample providers felt that it was unnecessary, or that they were unqualified, to reconcile ICD codes at the level of specificity provided by specialists.

Second, practices differed in whether or not they included acute problems on the problem list and short-term medications on the medication list. These decisions were partially a result of poor EHR usability, but

some providers also questioned the value of investing time in reconciling short-term/acute information, such as an ankle fracture or ear infection, since it would likely have to be removed during the next encounter. There was recognition, however, that this heterogeneity in provider behavior would impact the value of meeting the criterion.

EHR Vendors

I. EHR Innovation to Improve Summary of Care Records (SCRs)

Practices in the implementation sample had EHRs capable of generating Summary of Care Records (SCRs), and most utilized the local health information exchange effort (Michigan Health Connect) to send them electronically during a referral by uploading the SCR to a portal. A common challenge was that SCRs contained a lot of superfluous information that was auto-generated by the EHR and this interfered with clinicians' ability to locate relevant information. Primary care providers (PCPs) felt that specialists often missed important details relevant for the referral because they were so difficult to find in the SCR. As a result, one-third of practices inconsistently or never used the auto-generate SCR feature within their EHR.

Data from our statewide survey revealed varied opinions across PCPs as to which record elements should be shared when patients are transferred across care settings (Table 5). Practices in the implementation sample further explained that decisions about the relevancy of certain information also varied within provider, based on the patient, his/her history and preferences of the receiving physician. While federal criteria will dictate the types of information that must be shared to support transitions of care, our data point to the value of designing EHR functionality that enables more customization of SCRs.

Table 5. Percent of Primary Care Providers Responding that Specific Information Elements should be Shared during Transitions of Care

	REFER a patient to a specialist	RECEIVE a patient back from a specialist	RECEIVE a patient after discharge from the hospital
Problem list	77%	59%	73%
Assessment (e.g., notes summarizing key problems)	76%	78%	75%
Medication allergies	75%	60%	60%
Radiology reports	75%	76%	76%
Lab test results	74%	78%	78%
Known contra-indications for medications patient is taking	64%	55%	59%
Care plan	44%	79%	75%
Radiology images	40%	39%	36%
Social history	35%	16%	16%
Assessment of functional status (e.g., ability to perform ADLs)	35%	45%	56%

Approximately one-quarter of implementation sample practices reported that their EHR currently included some functionality to customize SCRs, such as the ability to limit information by date range, check-boxes or radio buttons to deselect certain types of information, and/or templates to consistently pull the same information for specific specialists or referral types. A few providers also designed customizations with their vendor to have flexibility in structuring the document so that they could prioritize a concise narrative and emphasize the most relevant details. These features typically included moving the narratives to the front of the document and other visual cues (e.g. highlighting or bolding) to indicate importance.

Practices in the implementation sample felt that SCR functionalities could be further improved by enhancing usability and degree of available customization. For example, practices sought better filtering options to specify a more granular level of patient history to be included in the SCR while still meeting meaningful use criteria. Practices also felt that branching logic or guided steps would make it easier to streamline the creation of customized SCRs.

Primary care providers valued receiving SCRs from specialists. However, they cited similar challenges in that the SCRs generated by specialists' EHRs were often dense and obscured relevant new information. PCPs felt that SCRs that visually highlighted new or updated information generated during the referral would help them review the SCR and identify what to incorporate into their EHR.

Current EHR Features Valued for Care Coordination:

- Customization/electronic editing of information contained in SCRs through use of check-boxes, date range filters and templates
- Strategic location of concise narrative; reordering of SCR components to emphasize important information

Future EHR Innovations to Enhance Care Coordination:

- Ability to better filter information for a more concise and usable SCR, while still meeting meaningful use criteria
- Branching logic or guided workflows to facilitate customization of SCRs
- *SCR generation from primary care to specialists*: Functionality to visually or otherwise highlight most important pieces of information throughout the document
- *SCR generation from specialists to primary care*: Functionality to visually or otherwise highlight new or updated information resulting from the referral

II. EHR Innovation to Support Team-based Primary Care Delivery

A broader set of policy efforts beyond meaningful use promotes enhanced primary care delivery models that have significantly increased care coordination and documentation requirements for primary care practices. In response, many implementation sample practices described transitioning to team-based care models that better utilize staff at different levels of training in order to meet patient care needs without additional physician burden. Implementation sample practices described a need for their EHR to better accommodate and support the documentation, workflows and necessary communication tools of multi-disciplinary care teams. Specifically, EHR innovations are needed that improve work coordination among staff and increase transparency of accountability when multiple individuals are providing care to the same patient.

The most common EHR feature used to support team-based care was tasking and task management. Over two-thirds of practices used tasking to track patient care needs as well as to delegate and follow up on staff responsibilities. Some EHR task features were more robust, allowing providers and staff to indicate status of a task, and run reports or receive alerts when tasks were incomplete. Many practices coupled this functionality with use of internal notes or messaging functions to create a record of task hand-offs and provide a communication space for shared understanding of responsibility. Having a team operate off of an assigned task queue served to coordinate tasks and also kept workloads open and transparent, providing accountability and ensuring tasks were completed in a timely way.

A small subset of implementation sample practices used embedded templates and clinical decision support features to facilitate greater autonomy and scope of work for non-physician staff. For example, templates and guided workflows with pop-up decision support helped one practice better utilize their nurses and mid-level staff in more enhanced care roles. Additional features, such as the ability to rank tasks by sensitivity or deadline, were requested by several practices. Practices also called for further EHR innovations to accommodate and integrate the workflow and documentation needs of ancillary team members, such as care managers, who are increasingly being incorporated in to care teams.

Current EHR Features Valued for Care Coordination:

- Robust tasking features with shared queues, direct assignment and alerts to identify incomplete tasks
- Plural patient record access to support concurrent workflows of team members
- Ability to electronically transmit notes to other team members within the EHR for improved communication
- Templates and guided workflows with clinical decision support to enable more delegation and greater autonomy to lower-level staff

Future EHR Innovations to Enhance Care Coordination:

- Enhanced task functionality such as on-screen to-do lists and ability to rank tasks by sensitivity or deadline
- Functionalities to accommodate and integrate workflow and documentation needs of ancillary team members, such as care managers

III. EHR Innovation to Better Manage Patient Care in an Information-Rich Context

Richer information flowing between and within practices has the potential to enhance primary care provider decision-making and improve care coordination. In the absence of interoperability across EHR vendor systems, however, practices struggled to effectively manage this information and therefore felt they were not fully capturing the potential benefits of their EHR. EHR innovations to better manage patient care in an information-rich context fell into two areas: receipt of information and reconciliation of information.

EHR functionality for receiving information during patient care transitions: Referrals and Hospitalizations

Referrals: All practices hoped that interoperability across EHR vendor systems would enable automated updating of information within their EHR. Specific to referrals, practices wanted their EHR to contain

current referral status and information from referral reports. Practices that were part of an integrated health system and on a shared EHR platform had these features and described more timely notification about referral status, and better integration of information from those encounters into their EHR.

Despite a lack of interoperability, some practices' EHRs did a better job of supporting referral workflow and streamlining staff processes to better manage patients' care transitions. For example, some practices used task lists or orders to track referrals or manage communication with specialists. These items were kept "open" in the EHR until the referral report was received. Staff found it particularly useful to be able to run reports on pending or overdue communication from the specialist regarding appointments or visit notes. Maintaining an accurate status of referrals, however, required substantial human-mediated communication with specialists.

Practices also requested better tools to incorporate information from external settings into their EHR in a consistent and easily accessible way. Providers were often unaware that new information was available because the EHR offered multiple options for where the information might be stored and it was not obvious when new information had been entered. Providers therefore failed to use documentation sent from external settings to inform care. Design elements such as the ability to tag or label documents for cross-listing in multiple places within the EHR would help providers more easily locate and utilize information.

Hospitalizations: Many practices relied on hospital portals to learn if their patients were hospitalized and to download documentation about their patients. Some practices received automated admission, discharge, or transfer (ADT) alerts, but felt overwhelmed by the volume of separate notices received throughout a patient's hospital visit and post-hospitalization. Providers and staff were most interested in notice of admission and details contained in the discharge summary; intermediate notifications were considered less useful. Threading of hospital communications and ability to have EHR systems recognize and flag incoming communication by level of importance were therefore perceived as valuable.

Current EHR Features Valued for Care Coordination:

- Ability for practices to run reports on pending or overdue tasks/orders to manage and close the loop on patient referrals

Future EHR Innovations to Enhance Care Coordination:

- Automatic incorporation of referral reports, other incoming information, in to relevant section of patient record
- Document tagging and/or ability to cross-list documents in multiple EHR locations for easier information retrieval
- More automation in closing out pending tasks/orders for completed referrals, e.g. when referral reports are scanned in
- Enhanced notification system for arrival of new information in the EHR, including ability to filter/sort by importance

EHR functionality for managing information following patient care transitions

Reconciliation: Practices struggled to incorporate large volumes of incoming documentation into their EHR. Practices expressed desire for auto-reconciliation features, with some automatic import and

integration of data from hospitals and specialists. With the exception of labs and imaging, practices were still largely receiving read-only files – via fax, mail, or hospital portal download – that require scanning into the EHR. Even documents received electronically through the community HIE platform or via e-fax were still read-only documents; reconciliation therefore required a visual comparison of records with manual entry of new information.

A frustrating result of this process was multiple entries of the same (or similar) diagnoses or prescriptions that were entered into the EHR, cluttering the problem and medication lists. EHR auto-reconciliation functionality – the ability to support de-duplication or collapsing of similar entries to produce cleaner, more usable lists – was therefore perceived as valuable. Practices felt that the ability to easily tie ICD codes to entries within both the problem and medication lists would be one useful way to provide underlying structure for this functionality. Linking entries to the ICD coding classification system would also enable better organization of existing information within the record and provide the basis for enhanced interaction and safety alerts.

Some practices had the option to embed links to ICD codes using structured fields; however, practices reported inconsistent use of the functionality. Clinicians struggled to search underlying databases to locate and attach the appropriate ICD code; currently available software did not provide intuitive, comprehensive or consistently accurate ICD search capability. While auto-reconciliation of internal records with documentation from specialists, hospitals or third-party sources of pharmacy information is not possible in the absence of interoperability, practices felt that receiving incoming documentation with attached ICD codes would still provide value by aiding their staff in performing manual reconciliation.

Acute vs. Chronic Documentation: At least half of implementation sample practices described challenges related to accurate and efficient documentation of short-term, acute problems or medications in their EHRs. Providers sought EHR enhancements that would improve their ability to capture the distinction between active versus past medications, and acute versus chronic conditions when managing and sending out patient information. Lack of this functionality resulted in providers making documentation decisions likely to compromise patient care. For example, some practices chose not to enter acute problems, such as sinus infections, in the problem list to avoid clutter. This information may be valuable to specialists and without it providers may fail to identify chronic issues.

Several EHRs allowed providers to enter course of treatment information for prescriptions so that medications would automatically drop off of the “current” medication list. Providers valued drag-and-drop functionality and radio buttons to easily move entries between the active and past sections of problem and medication lists.

Current EHR Features Valued for Care Coordination:

- Auto-removal of short-term medications from active medication list based on entered course of treatment
- Drag-and-drop or radio button features to easily move problems or medications to past information section(s)

Future EHR Innovations to Enhance Care Coordination:

- Ability to attach ICD codes to problems and medications, enabling:

- easier reconciliation
- threading/grouping of similar issues
- improved interaction alerts and decision support
- Tailored functionality for differentiating acute versus chronic problems and medications

Primary Care Practices

Implementation sample practices reported a set of general strategies to meet Stage 3 meaningful use care coordination criteria in order to increase the value of doing so.

I. General Strategies:

Maximize effective use of available EHR and HIE functions. While all implementation sample practices had an EHR, had achieved Stage 1 meaningful use, and had similar HIE options available, those that fully understood how to use their EHR and HIE functionalities were better able to overcome, eliminate, or work around care coordination barriers. To facilitate effective use, it was necessary to dedicate staff time and resources to learn about the full set of functionalities. Participating in vendor conferences or developing strong communication with vendors (both EHR and HIE) helped practices leverage their EHR and HIE functionalities, particularly when barriers were encountered. Staff with this knowledge, known as super-users, were often paired with less experienced staff to ensure the knowledge was disseminated across the practice. It was also helpful to create practice policies to ensure consistent use of the EHR, such as where to document specific types of information from referral reports or discharge summaries when the EHR offered more than one option.

Utilize the lowest level of staff appropriate for managing referrals, information exchange, and integration of information related to care coordination. A common complaint from providers was reduced face-to-face time with patients during the encounter due to the need to spend more time working with the EHR. Shifting as much of the EHR-related work as possible to the lowest level of staff promoted more efficient use of provider time, but caused some challenges as staff adjusted to their new tasks. Many physicians had trouble delegating tasks, and the volume of new tasks often overwhelmed support staff. Practices found it helpful to make gradual adjustments, shifting one or a few tasks at a time from physicians to support staff.

A complementary strategy was to empower practice managers to lead changes in division-of-labor and hold staff accountable for their assigned tasks. EHR tasking features were often used to reinforce these changes. Together, these tactics ensured that patient data was properly documented before it reached the providers, which allowed providers to spend more time focused on patient care.

Engage the local community and referral network to learn strategies for EHR and HIE use, and to set community norms. Practices reported learning from their peers about how best to optimize staff and workflows to accommodate increased use of EHRs and HIE to support care coordination. Participating in meetings with physician organizations, local hospital systems, HIE vendors, and others was a valuable resource for practices to glean strategies. These forums also allowed practices to provide input on setting community norms for care coordination – such as the type of information that is shared during care transitions and the timing for doing so.

II. Strategies to Address Specific Barriers:

Beyond the general strategies outlined above, practices reported a set of strategies that could help address specific barriers to meeting Stage 3 care coordination criteria in ways that were perceived to add value.

Barrier: *Difficulty generating referral materials from the EHR, including a usable Summary of Care Record (SCR).* Some implementation practices struggled to pull the information needed for a referral from their EHR. This was due to various issues, such as the organization of information in the EHR, the EHR's inability to compile a SCR with the appropriate level of detail or desired customization, or the inability of the EHR to send a referral directly to the specialist.

Strategies: *Create processes to clearly identify required data and reduce extraneous data for referrals.* Strategies that helped practices pull the information necessary for referrals included having the provider add notes directly to the chart to inform the support staff responsible for the referral which information or documents to include. Some practices included diagnosis codes in the problem lists within their referral request for clarity and for aiding communication with the specialists. This additional level of detail often reduced ambiguity during problem list reconciliation when more than one similar diagnostic code could apply.

To accommodate variation in referral information preferences from specialists, one practice created six referral templates based on the needs of their most frequently utilized specialists. They also limited additional customization to reduce staff time spent accommodating individual referral requests. To reduce extraneous data included in the referral request, some practices worked around EHR functionality, such as printing the SCR, removing certain pages, and then sending the partial SCR to the specialist. Strategies of this nature, however, may jeopardize provider ability to meet meaningful use requirements and so other practices chose to include but demarcate information required for meaningful use that was felt to be extraneous for the referral.

Barrier: *Tracking referral requests throughout the referral process.* Given the various methods for sharing information with specialists, practices reported significant difficulty tracking referral progress, including confirming that the patient had an appointment with the specialist, that they attended the visit, and that documentation was returned to the primary care practice.

Strategies: *Leverage existing HIE options and develop standard processes with individual specialists where possible.* Practices leveraged the tasking or orders features in their EHR to designate referrals as "in progress" in order to easily identify outstanding referrals. A subset of practices worked with specialists to develop a process to acknowledge referral receipt using functions available in the HIE platform offered by Michigan Health Connect. When the specialist practiced in a setting that offered a portal into their EHR, primary care practices that signed up for the portal found it to be useful for tracking referral status and retrieving information about the visit.

Barrier: *Processing incoming information from referrals and discharges.* Because of limited interoperability between EHRs, most referral reports and discharge summaries were returned to primary care practices on paper or in PDF. Significant staff time was required to review incoming information and

ensure it was filed or uploaded into their EHR (including manual data entry to update discrete data elements).

Strategies: *Establish clear protocols for where referral report and discharge information is documented, by whom and by when, and leverage automated processes when possible.* Practices used various personnel, process, technology, and community strategies to ensure that transition-of-care documentation was received and appropriately integrated into the EHR, as described below:

Personnel and process strategies: Practices established a clear process for who was responsible for data entry, how to enter data based on how it was received, and where to enter it into the EHR. Expectations were set for when, relative to the time the information was received, it was integrated into the EHR. Practices dedicated support staff at the lowest possible level (most often a medical assistant) to make the updates before the provider viewed the information.

Technology strategies: Practices that utilized portal access and set up interfaces with labs and pharmacies were able to expedite the process of receiving and reconciling patient data in their EHR. In addition, practices that received alerts when patients were admitted, discharged, or transferred (ADT) were able to avoid manually reviewing daily patient rosters to determine the status of their patients.

Community strategies: To increase the quality and timeliness of the data received from specialists in the referral report, and to facilitate the efficient integration of that information into their EHR, some practices collaborated with specialists to establish guidelines for what information should be included in referral reports and the timing for when it should be sent. If specialists repeatedly failed to meet the standards, practices would direct their referrals to adherent specialists.

Conclusion

Our study assessed the readiness, feasibility, and perceived impact of achieving proposed Stage 3 meaningful use care coordination criteria among primary care practices. These informed recommendations to policymakers, EHR vendors, and primary care practices to improve the value of the criteria. In our mixed-methods approach, we found that providers anticipated improved care coordination as a result of meeting proposed Stage 3 criteria. However, most practices lacked EHR and HIE functionalities, as well as underlying workflows, to ensure that achieving the criteria would enhance care coordination. Revisions to the criteria – primarily related to increased specificity and higher thresholds – would improve their value. These changes would be bolstered by efforts from EHR vendors to improve design and diffusion of innovations that support care coordination. Innovations related to customization of transition-of-care documents, task tracking, and automated reconciliation should be prioritized. Finally, specific practice-based strategies would further enhance care coordination and the value of meeting the Stage 3 criteria. These relate to learning more about existing EHR and HIE functionalities, and shifting EHR-related care coordination tasks from physicians to support staff where appropriate. Through action on the part of policymakers, EHR vendors, and primary care practices, our results suggest that the proposed Stage 3 meaningful use criteria have the ability to significantly improve the quality of care coordination.

List of Publications and Products

Adler-Milstein J, Cohen GR, Nong P, et al. Assessing Readiness, Achievement & Impact of Stage 3 Care Coordination Criteria: Summary of Key Findings for Policymakers. Final Report. Ann Arbor: University of Michigan; August 2014.

Adler-Milstein J, Cross DA. Assessing Readiness, Achievement & Impact of Stage 3 Care Coordination Criteria: Summary of Key Findings for Vendors. Final Report. Ann Arbor: University of Michigan; August 2014.

Adler-Milstein J, Day AV, Vibbert D, et al. Assessing Readiness, Achievement & Impact of Stage 3 Care Coordination Criteria: Summary of Key Findings for Primary Care Practices. Final Report. Ann Arbor: University of Michigan; August 2014.